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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/772,001	01/30/2001	Toshihiko Fujii	KOJIM-364	8476

7590

07/02/2002

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EXAMINER

SAGAR, KRIPA

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 07/02/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

MF=4

**Office Action Summary**

Application No.

09/772,001

Applicant(s)

FUJII ET AL.

Examiner

Kripa Sagar

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. 5973044 to Lutz et al.

The invention is directed towards a surface treatment agent and a resist patterning process using the agent.

The claims disclose an organo-siloxane containing adhesion promoter or primer. The siloxane comprises a functionally substituted alkylene (R-sup-1), an alkyl radical (R-sup-2) a hydrolyzable group of alkoxy radical (OX) bonded to siloxane (SiO). The substituting functional group (Y) is chosen from amino, mercapto and isocyanate among others.

The primer is formed by the hydrolysis of a silane comprising the units R-sub-1, R-sub-2 as above and a hydrolyzable alkoxy group (OZ), bonded to Si.

The use of silane and siloxane containing polymeric compositions as adhesion promoters and primers is well known (Lutz 1;10-2;20 ). Lutz teaches its application in electronics (5;56-59 ). Lutz teaches an organosilane-containing adhesion promoter taught in prior art (8;5-13). The Compound CA-4 (3-glycidoxipropyltrimethoxy silane) is similar to the claimed material for the primer (claim-2) comprising the

Art Unit: 1756

radicals (R-sup-1, R-sup-2, alkoxy and silane). Lutz teaches that the material did not perform well in the adhesion tests conducted (9;55-10;2). The improved adhesion of the same compound after reaction with alcohol and Lutz's inventive siloxane is discussed (10;3-60).

Lutz teaches the preparation of an organo-siloxane adhesion promoter and primer by reacting an alcohol, and organo-siloxane and a silane ( 2;35-67). It teaches the formation of siloxanes by hydrolysis of the reactive groups in the ingredients (5;31-51).

Lutz does not teach the specific siloxane primer.

Lutz teaches the specific silane as a starter. It teaches that the silanes may not promote adhesion of polymers. It teaches the hydrolysis of silanes to siloxanes. It teaches that siloxanes containing primers improve the adhesion of polymers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a siloxane-containing primer by hydrolyzing a silane of the type 3-glycidoxipropyltri methoxysilane, because Lutz teaches that this improves the adhesion-promotion of the compound.

3. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lutz as applied to claims 1-3 above in view of US Pat. 5668210 to Harris et al.

Lutz does not teach the use of the primer to promote adhesion of photoresist to metal (or metal oxide) or the patterning of the resist (claims 4-6).

Harris teaches the formation of primers and adhesion promoting agents. The primer is used to bond another polymer to a substrate (4;67-5;2). The substrates may

Art Unit: 1756

be metals and metal oxides used in electronics (5;57-67). The overcoated polymer may be photosensitive and cured by radiation. Alternatively, the primer may be mixed with the photoresist, applied and baked prior to exposure ( 6;11-31).

Harris does not specifically teach the patterning of photoresists. It is well known in the art that photoresists are applied in electronic manufacturing for patterning substrates.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Lutz's organo-silane primer to increase the adhesion of photoresists to substrates as taught by Harris because it teaches that it is conventional in the art (1;19-50). The examples further prove that there is a reasonable expectation of so improving the adhesion by using partially hydrolyzed silanes.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kripa Sagar whose telephone number is 703-605-4427. The examiner can normally be reached on 8:00AM--5:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Application/Control Number: 09/772,001

Page 5

Art Unit: 1756

ks/  
June 18, 2002

A handwritten signature in black ink, appearing to read 'Mark F. Huff', with a long, sweeping horizontal line extending to the right.

**MARK F. HUFF**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**